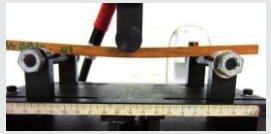
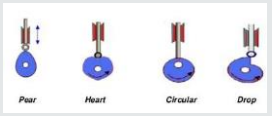
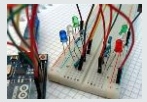
Design & Technology

Key Stage 3

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	PD Skills Passport 	Designing through sketching, modelling 	Acrylic Pen 		Phone Stand Storage Pot 	CAD CAM Sharpener 
	E-Textiles Skull Fabric Torch 			Catering Skills Passport 	EWP  Grill  Hob 	Fish  Oven 
Year 8	Clock – Design Movements 	Problem Solving  	USB Desk Lamp 		Beach Huts 	Space Saving Furniture 
	Forces and Stresses 	Mechanical Systems and Movement 		Baking Braising Frying 	Proteins Fats Carbohydrates 	Taste testing  Climate Change 
Year 9	Chocolate Box 	Coat Hook 	Sustainability Bug House 	Grand Designs 	Iterative Design 	Electronics Testing 
	Breads 	Cakes 	Pastry 	Street Food 	Special Diets 	Getting ready for GCSE 

Design & Technology: Product Design

Key Stage 3 – Year 7

In Year 7 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	DT Skills Passport	Students will develop an understanding of the importance of health and safety in the workshop as well as the need for accuracy when making a product. They are introduced to a range of hand tools and the polisher. They will learn how to recognise a hazard in the workshop and understand safe practice and the expectations of the department. Students develop practical skills such as using templates, filing, finishing and using a wide range of tools and equipment safely and successfully.
Autumn 2	Designing through sketching and modelling	Students will demonstrate an ability to sketch ideas in 2D and use a variety of mark making techniques to express their ideas on paper effectively adding depth and form using shading. They will learn how to create oblique and isometric views of simple forms and be able to define 'perspective', 'horizon line' and 'vanishing point' and understand how they are used to create a perspective drawing. They will learn how to create an accurate net for a cube and a pyramid and understand the importance of creating 3D physical models. They will work with materials and equipment to make physical models including computer aided design (CAD) where appropriate.
Spring 1	Acrylic Pen	Students will develop understanding of the design process with the main focus being on their ability to design and develop a range of ideas using the theme of 'organic design'. They are introduced to a range of graphical and presentation techniques and develop their ability to produce a high-quality finished product and use a wider range of tools and equipment within the workshop. They use Acrylic to produce their product and are introduced to the properties and characteristics of plastics. They will be expected to work to a tight specification throughout and to evaluate work at all stages of the project to ensure a successful finished outcome. Practical skills such as marking out, drilling, sawing, finishing will also be explored.
Spring 2		
Summer 1	Phone Stand Storage Pot	Students will develop understanding of the making process with the main focus being on their ability to produce a high-quality finished product. They are introduced to the properties and characteristics of timbers and manmade boards and learn how to identify them. They will use at least two different types of material to produce their product (softwood, hardwood, man-made) and are introduced to how to shape and form wood correctly. They learn how to use a manufacturing specification and how to analyse existing products using ACCESSFM. Students develop evaluative practical skills including making, planning and using templates.
Summer 2	CAD CAM Sharpener	Students will be introduced to the programme Fusion 360 whilst gaining experience and confidence of using the 3D printer. Students are introduced to the basic tools on Fusion 360 and shown how apply these. They will also work with a new material, either PLA or ABS to produce their product. Skills learned during this CAD CAM project include how to dimension a product, sketch simple shapes, boss extrude shapes, shell shapes, produce a linear pattern, smart dimension a shape and combine shapes, all using Fusion 360. N.B The CAD project is a roaming project and groups will complete this at different point in the year

Design & Technology: Textiles and Catering

Key Stage 3 – Year 7

In Year 7 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	E Textiles – Day of the Dead Skull	Students are introduced to some basic life skills through a small textiles project. They will be introduced to a range of equipment and learn why they are used. Students will understand how to create an -textiles circuit. They will learn a range of different hand sewing techniques that can then be applied to their project. They will also develop basic textiles skills like pinning, cutting and applique. They will make a skull shaped fabric torch with light up LED eyes. The eyes are made using e-textiles which are electronic components specially designed for use with textiles fabrics. During the project there will be some cross curricular links where students explore the holiday tradition of Dia de Muertos (The Day of the Dead).
Autumn 2		
Spring 1		
Spring 2	Working in Kitchens	Students will develop an understanding of the importance of health and safety in the kitchen as well as the need for accuracy when cooking or baking. They are introduced to a range of equipment including knives, weighing scales, the cooker and the gall. They will learn how to recognise a hazard in the kitchen and understand safe practice and the expectations of the department. Students develop practical skills such as knife skills, weighing and measuring, using the cooker and grill and food safety.
Summer 1	Food Safety	They will develop their practical skills including safe knife skills, baking skills by producing an apple crumble and boiling skills by making tuna pasta. Students will learn about bacteria and how we can control it to prevent food poisoning
Summer 2	Nutrition	Students will continue to develop their skills in the kitchen. This half term they will have the opportunity to make fish fingers / chicken nuggets (depending on stock / availability) and small cakes. They will also start to develop an understanding of the different groups of people that may need to be catered for, age groups, lifestyle, vegans etc. Students will learn about a healthy balanced diet and explore the Eatwell Plate and 'S a day'. They will learn about the different food groups including carbohydrates, vitamins, minerals and sugars

N.B, Textiles and Catering are on a carousel, students spend half the year in one of the subject areas before changing over at February half term

Design & Technology: Product Design

Key Stage 3 – Year 8

In Year 8 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Clock – Design Movements	Students will learn how to design a product that is fit for use and produce an accurate high quality finished product that is inspired by a chosen design movement. Students are also reminded about the properties and characteristics of plastics. They will also learn about health and safety symbols used in industry and how to work to a range of restrictions. They will learn about working drawings and how to produce and use them as well as how to accurately mark out material using templates. Practical skills such as marking out, drilling, sawing, finishing will also be explored.
Autumn 2	Problem Solving	Students will understand the terms form, function and aesthetics and that good design needs to consider and balance all three. They will learn what factors make a product aesthetically pleasing and recognise elements of good design over bad. They will understand the meaning of the term biomimicry and be able to describe different structures found in nature and how they function. Students will recognise how and why natural forms and structures are used to inspire design and new materials. They will explore where geometric and organic shapes found in nature have been used to create manmade structures. Students will generate their own design ideas inspired by organic forms and biomimicry. They will use simple tools and materials to produce models and learn how and why scale models are used.
Spring 1	USB Desk Lamp	Students will develop an understanding of working with mixed materials and are also reminded about the properties and characteristics of plastics and timbers as well as introduced to some properties of certain metals. Students will also experience some simple electronics and soldering. They will learn about working to a design brief and a tight set of restrictions, particularly material availability. Students will use client feedback to inform designs as well as using oblique sketching. They will accurately mark out material using a template, use the vacuum forming machine and develop practical skills such as marking out, drilling, sawing, finishing and assembling.
Spring 2		
Summer 1	Beach Huts	Students will have a visit to a local beach at a seaside town. They will need to explore the area and investigate potential sites for some new beach huts. The beach huts are to be inspired using user centred design. The students will need to identify a user group, gather relevant information from the site visit and then in the following weeks, design, develop and model a beach hut that would be suitable for their user group. Students will produce both cardboard and foamboard models.
Summer 2	Space Saving Furniture	Students will learn the different ways to research a design problem and select and conduct appropriate research methods to investigate a design problem. They will develop subject vocabulary with the terms: user, client, target market and ergonomics. They will be able to use a product analysis to determine user needs and create a design specification based on the needs of different consumers and focus groups. They will generate a range of appropriate and creative design solutions. They will explain and demonstrate the iterative design process and develop and improve design ideas using prototypes. They will test and evaluate ideas individually and as part of a team using constructive criticism and justify potential problems and offer solutions.

Design & Technology: Engineering and Catering

Key Stage 3 – Year 8

In Year 8 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Forces and Stresses	Students will be able to name and describe each of the different forces and stresses as well as recognise how materials have been stiffened or reinforced using bending, lamination, folding, webbing and interfacing. They will develop an understanding of the impact of forces and stresses on different materials and objects and learn how a material may be reinforced or stiffened using a range of techniques. Students will explore the effects of a change in magnitude and direction of a force on a specific material or object.
Autumn 2	Mechanical Systems and Movements	Students will learn to recognise and name the four different forms of movement and give examples of where the different forms of motion can be found. They will learn how levers and linkages work and how they can make moving a load easier. They will learn the different orders of lever and give example of where they can be found as well as understand how different levers and linkages gain a mechanical advantage and make some tasks easier. They will explore specialist levers, linkages and rotary mechanisms. Students will learn how an input motion can be changed to a different output motion by using different mechanisms. They will learn to recognise the differences in different rotary cams and how they interact with different followers. Students will use different cams and followers to design mechanisms. They will develop an understanding of and be capable in the selection of different mechanical components to make a working mechanism which they will then model in card and other materials to make simple prototype mechanisms. Students will develop their subject specific language including; input, output, load, effort, fulcrum, lubrication, idler, velocity, transmission, velocity ratio and how to calculate it in each system.
Spring 1		
Spring 2	Safety Cooking Methods Tasting foods	Students will develop their understanding of the importance of health and safety in the kitchen as well as the need for accuracy when cooking or baking. They will improve their ability to use a range of equipment including weighing scales, the cooker and the hob. Students improve practical skills such as knife skills, weighing and measuring, using the cooker and hob and food safety through making Muffins, Flapjack. Students will also gain new experiences building a subject vocabulary on taste testing
Summer 1	Nutrition	Students will expand their range of cooking methods through making a Bolognese sauce and a Risotto they will experience, sautéing, seating, braising and reductions. They will be introduced to fat- and water-soluble vitamins exploring why these nutrients are important for our bodies
Summer 2	Food Provenance	Students will look at how our choice of food can add to climate change by adding up the Food Miles of a Pizza, They are introduced to special digest that chefs need to consider when planning meus ensuring customers can still receive the required nutrients making a Quorn Wrap suitable for a Vegan. At the end of their time in Catering we will combine their skills to make a Cheesecake looking at using temperature and acids to set foods.

N.B, Engineering and Catering are on a carousel, students spend half the year in one of the subject areas before changing over at February half term

Design & Technology: Product Design

Key Stage 3 – Year 9

In Year 9 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Chocolate Box	Students will complete a small Graphics style unit using a range of different disciplines and skills that they have accumulated across KS3. Students will design a logo for their chocolate, produce a vacuum formed mould and use this to make their individual chocolates, as well as produce some packaging for their product. The emphasis will be on producing a high quality, marketable product.
Autumn 2	Coat Hook	Students will be introduced to a range of skills and knowledge that is closely linked to the Engineering course we offer at Key Stage 4. They material area for this project is metals, this allows students to use some new tools, equipment and machinery. Students learn how to mark out on metals which is a different process to that previously used when working with timbers and plastics. They will also have the opportunity to use the brazing hearth to anneal their material and complete an additional process – dip coating, As well as these new practical skills students will learn about, risk assessments, what they are, how to use them and how to produce one.
Spring 1	Sustainability Bug House	Students will focus upon these areas which link to the KS4 D&T curriculum: environmental issues, social and economic challenges, materials and their working properties, material management, techniques and finishes, joining woods, working drawings. design specification, design ideas, Making & writing an evaluation. Students will create an educational children's bug hotel using softwood that will have at least one wood joint and have a finish, so it is suitable for outdoor use. Students will complete a range of theory and design activities to enhance the knowledge of working at GCSE.
Spring 2	Grand Designs	Students will explore a range of environmental contexts including The six R's and sustainability. They will learn all about re-purposing and re-designing objects around us using practical, fun tasks. Students will need to design either a bedroom or kitchen, they will learn about floor plans, scale drawing, and scale modelling. Students will produce an accurate scale model of their final 'Grand Design'.
Summer 1	Iterative Design	Students will develop ideas for a sweet dispenser using an iterative design process, they will generate and refine design ideas using sketching, modelling, testing, prototypes and evaluating. They will develop the aesthetics and form of their design to appeal to the user. During this unit students will learn to generate a range of suitable design briefs. Students will develop their subject vocabulary with words including aesthetics, form and ergonomics. They will use this to demonstrate their understanding of ergonomics by designing a product that is fit for purpose. They will test and evaluate designs based on feedback and differentiate between good design' and 'design for good'.
Summer 2	Prototyping/ breadboarding circuits	Students will develop an understanding of basic electronic components and how they can be combined to create working circuits. The main focus will be based on 'learning through doing', building and testing circuits built from wiring diagrams. Students will learn how to interpret a wiring diagram, recognise component symbols and their real-life equivalent, manipulate components, apply simple mathematic formula to determine electronic values, build, test and fault-find working circuits. Practical work will be assessed by awarding marks for completed circuits.

Design & Technology: Catering

Key Stage 3 – Year 9

In Year 9 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Breads	Students will be introduced to a range of skills and knowledge that is closely linked to the Hospitality and Catering course we offer at Key Stage 4. They will look at the effect of ingredients while making several sweet and savoury yeast-based bread products. Learning how to combine solids and liquids correctly, kneading to understand the working properties of gluten and the effect of heat for dextrinisation.
Autumn 2	Cakes	Students will cover skills in preparation for Unit two in KS4, they will experience how chefs use the melting, creaming and whisking methods to make a selection of cakes. Students will also look at how decoration can influence customer's choice of foods. Students will be introduced to macro and micronutrients and begin to explore the effect that macronutrients have on our body.
Spring 1	Pastry	Students will develop an understanding of short crust, sweet and puff pastry and make a selection of pastry products. They will deepen their working knowledge of gluten gained from the bread topic and extend further their repertoire of savoury dishes. Students will be introduced to using different equipment such as rolling pins and flan rings or moulds.
Spring 2	Street food	Students will gain experience and knowledge of popular cuisine in food through cooking several foods that are popular in Britain because of immigration. Pupils will produce meals from Asia, India and Europe. In theory lessons students will leam of the consequences of importing ingredients to the planet and the advantages of buying locally sourced seasonal foods.
Summer 1	Special diets	Students will be introduced in both theory and practical lessons to the nutritional requirements of differing group of people. They will look at Vegans and how they need to sue protein complementation. Low fat diets and how fats and sugars affect the body and finally how to adapt recipes for a gluten intolerance and the consequences of mislabelling foods for allergies.
Summer 2	Working in the hospitality and Catering industry	In the last term students will be prepared for Key Stage 4, theory work will be linked to prior learning of nutrition, specialist diets, allergies and intolerances, all underpinned with food hygiene and safety. By the end of the term pupils should have been introduced to how the key stage 4 qualification will run and how they are expected to present their work both in theory and in practical.

Design & Technology

Key Stage 4 - Year 10

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Design and Technology: Product Design	Materials and their working properties	Timbers and Polymers		Designing Principles		Making Principles
	One lesson a week students will also complete a series of practical tasks					NEA
Engineering Design	**R040: Design, Evaluation and Modelling** Product Evaluation Modelling Design Ideas Completion of NEA	**R040: Design, Evaluation and Modelling** Product Evaluation Modelling Design Ideas Completion of NEA	**R038: Principles of Engineering Design** Designing Processes Design Requirements Communicating Design Outcomes Evaluation Design Ideas	**R038: Principles of Engineering Design** Designing Processes Design Requirements Communicating Design Outcomes Evaluation Design Ideas	**Skills Passport** Screwdriver Identity Tag Pop Riveting Multi Tool	**Skills Passport** Screwdriver Identity Tag Pop Riveting Multi Tool
Hospitality and Catering	The industry, job roles and requirements	Factors affecting success Hospitality operations	Hospitality operations Health and safety	Food safety	Food safety	Food safety Meeting customer needs

Design & Technology: Product Design

Key Stage 4 – Year 10

In Year 10 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Materials and their working properties	Students will learn about the physical and working properties of materials across a range of material areas including papers and boards, natural and manufactured timbers, metals and alloys, polymers and textiles.
Autumn 2	Timbers	Students will know the main processes involved in producing workable forms of timber and the processes of conversion and seasoning. They will recognise common faults in natural timber and explain how they can be reduced or avoided. They will be able to explain sustainability and ethical factors in timber production and in use and describe the consequences of illegal logging, as well as identify FSC and PEFC timber. They will know the common commercial stock forms, types and sizes of timber based materials and be able to identify different types of knock-down fittings. They will explore school based cutting, forming and processing techniques, tools and equipment. They will know how timbers and boards are selected and processed for commercial products and how materials are cut, shaped and formed to a tolerance. Students will be able to identify techniques for preparation and application of treatments and finishes to enhance functional and aesthetic properties. They will know the advantages and disadvantages of manufactured board compared with natural wood and why it is suitable for flat pack furniture. They will be able to describe the production and use of veneer, identify and explain the comparative advantages of different wood joints and calculate quantities of timber and board based on stock forms and sizes.
Spring 1	Polymers	Students will learn about the mileage of a product from raw material source, manufacture, distribution, user location and final disposal. They will know the different sources and origins of plastic and how polymers are made by refining crude oil through factional distillation. They will understand the purpose of adding stabilisers to polymers to resist UV degradation. Students will learn how to cut, drill, cast, deform, print and weld polymers and understand that polymers come in different stock forms, types and sizes. They will look at the specialist techniques and processes for forming polymers and a range of different surface treatments and finishes (polishing, printing and vinyl decals), as well as how a range of surface treatments and finishes affect the functional and aesthetic properties of plastics. They will understand the different plastic processes of vacuum forming, line bending, blow moulding, injection moulding and extrusion and why different polymers (thermoplastics and thermosets) are appropriate for different commercial applications.

Design & Technology: Product Design

Key Stage 4 – Year 10

In Year 10 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Spring 2	Designing principles	Students will learn how to complete investigative research through primary and secondary data. They will learn how primary and secondary data can be collected to assist the understanding of client and user needs. Students will learn how to write a design brief and produce a manufacturing specification. They will learn how the environment, and social and economic challenges influence designing and making. Students will investigate the work of others other design companies and analyse and evaluate their work. They will understand how investigating the work of other designers and design companies can inform designing. They will develop design strategies and be able to use a range of them to help produce imaginative and creative design ideas. They will also understand how to explore and develop design ideas. Students will know how to communicate, record and justify design ideas and be aware of a range of techniques to support clear communication of design ideas. They will know how to design and develop prototypes in response to client wants and needs and be able to critically evaluate prototypes and suggest modifications.
Summer 1		
Summer 2	Making principles	Students will learn how to select and use materials and components appropriate to a specific task and understand how functionality, availability and cost can all affect the selection of materials and components. They will develop an understanding of how tolerances are used to ensure accuracy when making a product and understand how a range of materials are formed to designated tolerances. They will develop an understanding of why tolerances are applied during making activities and how additional material may be required or removed by a cutting method. Students will learn how effective design planning can minimise waste and learn how to be aware of how design adaptations and use of tessellation can save time and materials. They will learn the value of using measurement and marking out to create an accurate prototype and understand the use of datum points and coordinates. They will be able to recognise and characterise the appropriate tools and methods to mark out a range of materials to create prototypes and how to select and use specialist tools, equipment, techniques and processes and be aware of relevant health and safety issues when using specialist tools, equipment, techniques and processes to protect themselves and others from harm. They will know and understand that surface treatments and finishes are applied for functional and aesthetic purposes and know how to prepare different surfaces for treatments and finishes.

Design & Technology: Engineering and Design

Key Stage 4 – Year 10

In Year 10 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1 Autumn 2	**R040: Design, Evaluation and Modelling** Product Evaluation Modelling Design Ideas Completion of NEA	Students will learn how designers can quickly create and test models to develop a working prototype of a design. They will develop your virtual modelling skills using computer aided design (CAD) 3D software, to produce a high-quality model that will be able to simulate a design prototype. They will also develop physical modelling stills using modelling materials and/or rapid prototyping processes to produce a physical prototype. They will leam about using ACCESS FM to analyse and compare products using an appropriate customer driven engineering matrix. Use primary and secondary research to identify the strengths and weaknesses of existing products. Undertake product research in order to analyse how products are made and assembled. Produce a virtual 3D model from a product specification provided. Plan the production of a prototype including risk assessments. Produce a prototype and record the process. Evaluate a manufactured prototype.
Spring 1 Spring 2	**R038: Principles of Engineering Design** Designing Processes Design Requirements Communicating Design Outcomes Evaluation Design Ideas	Students will learn about how products are designed and the different factors that influence their design, as well as how they are communicated, tested and evaluated. This will provide understanding that underpins the skills students will use in the other units of this course. In this unit, students will learn about the design process and all the stages that are involved. including different design strategies and when they are used. The stages of the iterative design process. Types of criteria included in a design specification. How manufacturing and other considerations influence design. Types of drawing used to communicate designs and methods of modelling and evaluating design ideas.
Summer 1 Summer 2	**Skills Passport** Screwdriver Identity Tag Pop Riveting Multi Tool	As well as units required for the course students will also complete a range of practical tasks that are designed to develop their workshop skills and confidence. The projects cover a wide range of practical skills with focus being on accuracy and interpretation of engineering drawings. These skills are fundamental to both NEA units and are used to develop students understanding as well as develop their independent skills.

Design & Technology: Hospitality and Catering

Key Stage 4 – Year 10

In Year 10 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Understanding the importance of nutrition How cooking methods can impact on nutritional value ion	Pupils will study: Macronutrients (Carbohydrates, Protein and Fat) , Micronutrients (Vitamins and Minerals) , Special dietary needs for individuals adults; early, middle, late (elderly) , children; babies, toddlers, teenagers. require different energy requirements based on lifestyle, occupation, age or activity level require special diets have medical conditions; allergens, lactose intolerance, gluten intolerance, diabetes (type 2), cardiovascular disorder, iron deficiency have dietary requirements, such as religious beliefs are pescatarians, vegetarians, vegans Learners should know and understand how the following cooking methods impact on nutritional value: boiling frying grilling poaching roasting steaming baking stir-frying
Autumn 2	Food related causes of ill health	Learners should know that ill health could be caused by the following: allergies bacteria chemicals intolerances Learners should know the following food poisoning causes: bacillus cereus campylobacter clostridium perfringens e-coli listeria salmonella staphylococcus aureus. Learners should know and understand the following food related causes of ill health: Food allergies: cereals (gluten crustaceans dairy products eggs fish fruit and vegetables lupin molluscs nuts peanuts sesame seeds soya wheat.
Spring 1	Symptoms and signs of food-induced ill health Factors affecting menu planning	Learners should know and understand the following symptoms of food-induced ill health: Visible and Non-visible Unit 1: 1.4.3 Preventative control measures of food-induced ill health. Learners should know and understand the control measures to prevent food induced ill health: cross contamination correct temperature in delivery, storage, preparation and service physical contamination. Learners should be aware of the following factors when planning menus: cost portion control balanced diets/current nutritional advice time of day clients/customers Learners should know and understand the following factors when planning menus: equipment available – the type of equipment required to produce a menu, specialist equipment, hand-held and electrical equipment. skills of chef – preparation, cooking and presentation, related to the needs of the dishes/menu/customer. time available – and type of provision e.g., service, location, size, standards – the production of dishes/menu in the time allowed. How to prepare, cook and present more than one dish at the same time. environmental issues – conservation of energy and water – how can the production of dishes be sustainable by using less energy and reducing consumption of water? Learners should know and understand the following terms: reduce reuse recycle sustainability time of year – seasonality of commodities organoleptic qualities.

Design & Technology: Hospitality and Catering

Key Stage 4 – Year 10

In Year 10 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Spring 2	How to plan production	Learners should be able to plan dishes for a menu and know and understand the following: commodity list with quantities contingencies equipment list health, safety and hygiene Quality points sequencing/dove-tailing timing mise en place cooking cooling hot holding serving storage
Summer 1	Presentation techniques	Learners should know and understand the importance of using the following appropriate presentation techniques during the production of dishes: Presentation techniques: creativity garnish and decoration portion control accompaniments
Summer 2	Reviewing of dishes Reviewing own performance Mock Assessment on Unit 2	Learners should be able to provide a brief review of their planning, preparation and cooking; highlighting areas of success and of potential further development. Areas to consider: dish production dish selection health and safety hygiene improvements organoleptic presentation waste. Learners should be able to identify personal strengths and weaknesses relating to: decision making organisation planning – including the advantages and disadvantages of chosen options and how they meet specific needs time management Mock CAT covering all Assessment Objectives. Covering the following content: 2.1.1 Understanding the importance of nutrition 2.1.2 How cooking methods can impact on nutritional value 2.2.1 Factors affecting menu planning 2.2.2 How to plan production 2.3.1 How to prepare and make dishes 2.3.2 Presentation techniques 2.3.3 Food safety practices 2.4.1 Reviewing of dishes 2.4.2 Reviewing own performance

Design & Technology

Key Stage 4 - Year 11

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Design and Technology: Product Design	Making Principles	New and emerging technologies	Energy, materials, systems and devices	Specialist technical principles	Exam prep	
	NEA – Non Examined Assessment					
Engineering Design	**R039: Communicating Designs** Manual production of freehand sketches Manual production of engineering drawings Use of CAD Completion of NEA	**R039: Communicating Designs** Manual production of freehand sketches Manual production of engineering drawings Use of CAD Completion of NEA	**R038: Principles of Engineering Design** Designing Processes Design Requirements Communicating Design Outcomes Evaluation Design Ideas	**R038: Principles of Engineering Design** Designing Processes Design Requirements Communicating Design Outcomes Evaluation Design Ideas	Exam prep	
Hospitality and Catering	Health and safety of the kitchen and front of house Food Safety Food related causes of ill health Symptoms and signs of food-induced ill health Preventative control measures of food-induced ill health	The Environmental Health Officer (EHO) Customer requirements in hospitality and catering	Controlled assessment	Exam Revision Hospitality and catering providers Working in the hospitality and catering industry Working conditions in the hospitality and catering industry Contributing factors to the success of hospitality and catering provision	The operation of the front and back of house Customer requirements in hospitality and catering Hospitality and catering provision to meet specific requirements Health and safety in hospitality and catering provision Food Safety	

Design & Technology: Product Design

Key Stage 4 – Year 11

In Year 11 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Making principles	Students will learn how to select and use materials and components appropriate to a specific task and understand how functionality, availability and cost can all affect the selection of materials and components. They will develop an understanding of how tolerances are used to ensure accuracy when making a product and understand how a range of materials are formed to designated tolerances. They will develop an understanding of why tolerances are applied during making activities and how additional material may be required or removed by a cutting method. Students will learn how effective design planning can minimise waste and learn how to be aware of how design adaptations and use of tessellation can save time and materials. They will learn the value of using measurement and marking out to create an accurate prototype and understand the use of datum points and coordinates. They will be able to recognise and characterise the appropriate tools and methods to mark out a range of materials to create prototypes and how to select and use specialist tools, equipment, techniques and processes and be aware of relevant health and safety issues when using specialist tools, equipment, techniques and processes to protect themselves and others from harm. They will know and understand that surface treatments and finishes are applied for functional and aesthetic purposes and know how to prepare different surfaces for treatments and finishes.
Autumn 2	New and emerging technologies	Students will learn about the design and organisation of the workplace as well as specialist tools and equipment. They will know that new technologies need to be developed and produced in a sustainable way and be aware of the impact that excessive use of certain materials has on the environment. They will understand how the environment can be protected by responsible design and manufacturing and how waste can be disposed of with the least impact on the planet as well as the positive and negative impacts new products have on the environment. Students will learn how technology push and market pull affect consumer choice and employment, understand changes in job roles due to the emergence of new ways of working, be aware of changes in fashion and trends and how they affect designers and manufacturers and understand how new products can have both a positive and negative impact on society. They will explore contemporary and potential future use of automation, Computer Aided Design (CAD) and Computer Aided Manufacturing (CAM), be able to recognise and characterise the use of Flexible Manufacturing Systems (FMS) and understand how Just In Time (JIT) and Lean Manufacturing contribute to manufacturing efficiencies. Students will be able to evaluate the advantages and disadvantages of planned obsolescence from different perspectives and understand how products can be designed to be repaired and recycled whilst being aware of ethical and environmental concerns when designing with new technologies.

Design & Technology: Product Design

Key Stage 4 – Year 11

In Year 11 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Spring 1	Energy, materials, systems and devices	Students will explore how power is generated from oil, gas, coal and nuclear sources and how renewable energy is generated from a variety of sources. They will look at arguments for and against the selection of fossil fuels, nuclear power and renewable energy. Students will understand the difference between alkaline and rechargeable batteries. They will be able to describe kinetic pumped storage systems. They will know the names and definitions of a range of modern, smart and composite materials and how they might be applied to given situations. They will understand the unique properties of technical textiles and justify suitable applications. Students will know the benefits of microencapsulation. They will be able to recognise and describe a range of input and output components, physically and symbolically and understand that all systems comprise of one or more inputs, processes and outputs. They will be able to suggest a suitable input or output device for a given scenario and recognise different types of mechanical movement. They will be able to state examples of first, second and third order levers and understand how linkages change the direction of movement as well as suggest a suitable linkage for a given scenario. Students will be able to recognise different types of cams and followers and understand that pulleys can change the magnitude of force required to lift mass and how the action of forces, levers and gears transmit and transform the effects of forces.
Spring 2	Specialist technical principles	Students will be able to name and describe each of the different forces and stresses and understand the impact they have on different materials and objects. They will be able to recognise and explain how materials have been stiffened or reinforced using a range of techniques and give examples of the use of bending, lamination, folding, webbing and interfacing and explain how it affects the strength of a material. They will understand ecological and social footprint and be able to describe the ecological and social footprint left by designers. Students will understand how deforestation, mining, drilling and farming affect our ecological footprint and that carbon dioxide is produced during the manufacture of products and its influence on global warming. They will be able to summarise the product mileage accumulated during the sourcing of raw materials, manufacture, distribution, user location and final disposal of a given product. They will know how each of the six Rs can be applied to a given product. They will be able to explain the ethical and the social footprint of materials used in products, and how the footprint may be reduced at the design stage. They will understand how safe working conditions and pollution impact on others. Students will know how products are produced in each of the four main scales of production and suggest appropriate scales of production related to specific materials and components and manufacturing techniques. They will also be able to describe the relationship between production volumes and methods and explain the factors involved in selecting an appropriate manufacturing method.
Summer 1	Exam prep	Students will re cap on all prior learning and spend time looking at exam techniques and how to answer exam style questions.

Design & Technology: Engineering Design

Key Stage 4 – Year 11

In Year 11 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1 Autumn 2	**R039: Communicating Designs** Manual production of freehand sketches Manual production of engineering drawings Use of CAD Completion of NEA	Students will develop techniques in sketching and gain skills in engineering drawing. They will learn about using standard conventions including dimensioning, line types, abbreviations and representation of mechanical features. They will use computer aided design (CAD), 2D software and 3D software to produce accurate and detailed drawings and models that visually communicate their designs. They will learn about producing freehand sketches of a design idea in 2D and 3D. Produce proposals that respond to the specification provided. Develop design proposals with annotation and labelling. Produce technical drawings using the correct standards and conventions and use CAD software to produce formal presentation design proposals.
Spring 1 Spring 2	**R038: Principles of Engineering Design** Designing Processes Design Requirements Communicating Design Outcomes Evaluation Design Ideas	Students will learn about how products are designed and the different factors that influence their design, as well as how they are communicated, tested and evaluated. This will provide understanding that underpins the skills students will use in the other units of this course. In this unit, students will learn about the design process and all the stages that are involved. including different design strategies and when they are used. The stages of the iterative design process. Types of criteria included in a design specification. How manufacturing and other considerations influence design. Types of drawing used to communicate designs and methods of modelling and evaluating design ideas.
Summer 1	Exam prep	Students will re cap on all prior learning and spend time looking at exam techniques and how to answer exam style questions.

Design & Technology: Hospitality and Catering

Key Stage 4 – Year 11

In Year 11 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Health and safety in hospitality and catering provision of the kitchen and front of house	Learners should know and understand: Food Safety; Food related causes of ill health; Symptoms and signs of food-induced ill health; Preventative control measures of food-induced ill health; and Health and safety in hospitality and catering provision
Autumn 2	Customer requirements in hospitality and catering The Environmental Health Officer (EHO)	Learners should know and understand how hospitality and catering provision meets the requirements of customer needs (catering, equipment, accommodation), customer rights and inclusion (disability) and equality. Learners should know and understand the role of the Environmental Health Officer (EHO) and that responsibilities including collecting evidence including samples for testing, photographs, interviews; enforcing environmental health laws follow up complaints; follow up outbreaks of food poisoning; inspecting business for food safety standards; giving evidence in prosecutions; maintaining evidence; and submitting reports.
Spring 1	Controlled Assessment	Leaners will produce a portfolio of evidence to cover the following in exam conditions1: Understanding the importance of nutrition; How cooking methods can impact on nutritional value; Factors affecting menu planning; How to plan production; How to prepare and make dishes; Presentation techniques; Food safety practices; Reviewing of dishes; and Reviewing own performance.
Spring 2	Exam Revision	Students will recap on all prior learning and spend time looking at exam techniques and how to answer exam style questions.
Summer 1	Exam Revision	Students will recap on all prior learning and spend time looking at exam techniques and how to answer exam style questions.

Design & Technology

Key Stage 5

Year 12	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Design and Technology: Product Design	Polymers Metals Woods	Metals Woods Papers & Boards	Composite, Smart and Modern Materials	Modern, Industrial and Commercial Practice	Product Design Considerations	Product Design Development
	Short focussed practical tasks					NEA

Year 13	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	
Design and Technology: Product Design	Design Methods	Design Processes	Responsible Design		Exam Prep	
	NEA					

Design & Technology

Key Stage 5

In Year 12 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Polymers Metals Woods	Performance characteristics of polymers including – characteristics of polymers and additives; applications of polymers; stock forms and types of polymers; elastomers; and biodegradable polymers. Processes and working with polymers including – working with polymers; forming polymers; and finishing polymers. Performance characteristics of metals including – stock forms and types of metals; performance characteristics of metals; and testing and treatment of metals. Processes and working with metals including – forming metals; joining metals; wasting metals; and finishing metals. Performance characteristics of woods including – stock forms and types of woods; performance characteristics; and testing and finishing of woods. Processes and working with woods including – working with woods; forming woods; and finishing woods.
Autumn 2	Metals Woods Papers and boards	Performance characteristics of metals including – stock forms and types of metals; performance characteristics of metals; and testing and treatment of metals. Processes and working with metals including – forming metals; joining metals; wasting metals; and finishing metals. Performance characteristics of woods including – stock forms and types of woods; performance characteristics; and testing and finishing of woods. Processes and working with woods including – working with woods; forming woods; and finishing woods. Performance characteristics of papers and boards including – performance characteristics; applications of papers and boards; and recycling of papers and boards. Processes and working with papers and boards including – forming processes; bonding, jigs and fixtures; and finishing papers and boards.
Spring 1	Composite, smart and modern materials Design Methods	Performance characteristics of composite materials, performance characteristics of smart materials and performance characteristics of modern materials. Design methods including – design methods and processes; design influences, styles and movements; designers and their work; socio-economic influences; developments in technology; social, moral and ethical considerations; and product life cycle.
Spring 2	Modern, industrial and commercial practice	Modern, industrial and commercial practice including – scales of production; efficient use of materials and resources; computer systems in manufacturing; digital design and manufacturing; and modelling, testing, marketing and scheduling.
Summer 1	Product design considerations	Product design considerations including – product development and improvement; inclusive design; safe working practice; protecting designs and intellectual property; manufacture, repair, maintenance and disposal; efficient manufacturing techniques; and design for disassembly.
Summer 2	Product design development NEA	Product design development including – feasibility studies; enterprise and marketing; communicating data; and design communication.

Design & Technology

Key Stage 5

In Year 13 you will learn about ……..

Term	Topic	Knowledge, Skills and Understanding
Autumn 1	Design Methods NEA	Design methods including – design methods and processes; design influences, styles and movements; designers and their work; socio-economic influences; developments in technology; social, moral and ethical considerations; and product life cycle.
Autumn 2	Design Processes NEA	Design processes including – the use of a design process; prototype development; industrial and commercial contexts; critical analysis, testing and evaluation; third party testing and evaluation; tools, equipment and processes; and accuracy in design and manufacture.
Spring 1	Responsible Design NEA	Responsible design including – environmental issues; circular economy; conservation of energy; planning for accuracy; quality assurance and quality control; and standards.
Spring 2	NEA	
Summer 1	Exam Prep	Students will re cap on all prior learning and spend time looking at exam techniques and how to answer exam style questions.
Summer 2		